Paper No. 37

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKASHI MASAKI
and SHIGENORI YANAGI

Appeal No. 1998-0146
Application 08/407,058[1]

HEARD: October 10, 2000

Before BARRETT, RUGGIERO, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

[1] Application for patent filed March 17, 1995, entitled "Optical Disc Apparatus With Optical Head Cleaning," which is a continuation of Application 08/084,006, filed June 29, 1993, now abandoned, which claims the foreign priority benefit under 35 U.S.C. § 119 of Japanese Application 4-176308, filed July 3, 1992.

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1, 2, 4-8, and 10. Claim 3 stands objected to. Claim 9 has been canceled.

We affirm-in-part.

BACKGROUND

The disclosed invention relates to an optical disk apparatus in which an optical head objective lens is cleaned using a cleaning disk. The cleaning disk, having a brush, is mounted for rotation in place of the optical disk. The objective lens is controlled to reciprocate back and forth in a radial direction while simultaneously being moved axially toward and away from the rotating cleaning disk. Thus, there are three simultaneous cleaning motions: (1) rotation of the cleaning disk; (2) reciprocating radial movement of the lens; and (3) axial up-and-down movement of the lens.

Claim 1 is reproduced below.

1. An optical disk apparatus comprising:

a shaft rotatably driven by a motor;

a cleaning disk, having a brush, removably mounted on said shaft;

an optical head with an objective lens driven by a lens driver; and

cleaning control means for rotating said cleaning disk in a state when said cleaning disk is mounted on said shaft by starting said motor while simultaneously moving the objective lens toward and away from said cleaning disk and reciprocating said optical head toward the inner and outer peripheries of the disk by driving said lens driver.

The Examiner relies on the following prior art:

U.S. Patents

Yamamoto	4,870,636	September 26, 1989
Nonaka	5,424,884	June 13, 1995 (effective filing date November 20, 1990)

Japanese Published Patent Applications (Kokai)

Adachi[2]	62-204441	September 9, 1987
Mitani	2-232826	September 14, 1990
Sugano	3-29125	February 7, 1991

Claims 1, 4-8, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto and Sugano.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto, Sugano, and Nonaka.

Claims 1, 4-8, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Adachi and Mitani.

We refer to the Final Rejection (Paper No. 24) (pages referred to as "FR__"), the Examiner's Answer (Paper No. 30) (pages referred to as "EA__"), and the Supplemental Examiner's Answer (Paper No. 33) (pages referred to as

[2] A translation of Adachi accompanies this decision. Translations of Mitani and Sugano are already of record.

"SEA__") for a statement of the Examiner's position, and to the Appeal Brief (Paper No. 29) (pages referred to as "Br__") and the Reply Brief (Paper No. 32) (pages referred to as "RBr__") for a statement of Appellants' arguments thereagainst.

OPINION

Yamamoto and Sugano

Yamamoto discloses rotating the cleaning unit 63 having a cleaning member 26 while reciprocating the objective lens in the radial direction (col. 6, lines 60-66). Yamamoto states (col. 6, line 66 to col. 7, line 4):

> Therefore, that area of cleaning member 26 which contacts objective 27 is widened, thereby making it possible to use substantially all area of cleaning member 26 for cleaning. The cleaning capability of cleaning member 26 can be thus enhanced and the life of cleaning member can be made longer.

Sugano discloses an apparatus for cleaning an objective lens of an optical disk device which does not require special processing for the cleaning operation. When the cleaning disk is inserted into the optical disk device, the optical pickup travels to a prescribed position. While the cleaning disk rotates, the objective lens 18 is moved up and down by the focusing mechanism in an attempt to achieve focus. If a focus error signal is unavailable after five attempts, this is determined to be a focus error, the focus error code is set (step 112 in figure 11(a)), and the device proceeds to a standby state (translation, p. 22). During

these up and down operations the brush member 9 contacts the objective lens about 50 to 60 times (translation, p. 23).

The Examiner finds that Yamamoto does not disclose "moving the objective lens toward and away from said cleaning disk," as recited in claim 1, but that this is taught by Sugano. The Examiner concludes that it would have been obvious to "have the cleaning control means [in Yamamoto] include a command to move the objective lens toward and away [from] the cleaning disk during a cleaning sequence to allow for shorter brushing members on the disk, reducing the chance of strands from the brush falling off and adversely affecting recording/reproducing of the apparatus" (FR3; EA4-5).

Appellants argue that the motivation to combine references is not disclosed, implied, or suggested in the prior art (Br7). It is argued that the Examiner's rationale is based on the problem of strands falling off the brush requiring shorter brush strands and modifying Yamamoto to accommodate the shortened strands by reciprocating the lens toward and away from the cleaning disk and that this problem/solution scenario is not discussed in either

Yamamoto or Sugano (Br7-10). Reasons are provided why one of ordinary skill would not have modified Yamamoto to move the lens toward and away from the brush to accommodate shorter brush strands (Br12).

We agree with the Examiner's obviousness conclusion, but not with his statement of motivation. There is no teaching in Yamamoto or Sugano that strands falling off the brush were a problem, or that combining Yamamoto and Sugano would have been a solution to the problem. It harms the Examiner's rejection to make up reasons which are unsupported by facts in the record because it looks like hindsight to invent reasons to combine. In this case, it is sufficient that one of ordinary skill in the art was taught to clean the objective lens by radial movement in Yamamoto and by up-and-down movement in Sugano. Each type of movement produces a different kind of cleaning of the lens. One of ordinary skill in the art would have been motivated to combine the individual teachings of Yamamoto and Sugano to produce a device which achieves the benefits of each type of cleaning. Cf. In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) ("It is prima facie obvious

to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. . . . [T]he idea of combining them flows logically from their having been individually taught in the prior art.").

Appellants argue that Sugano teaches away from the proposed combination because one of the objectives of Sugano is to provide a cleaning method and device that does not require special software and the modification of Yamamoto would require software to command the lens to move up and down, incurring additional expense (Br13; Br18).

The Examiner responds that the argument is unpersuasive because the appealed claims are not directed to specific software control steps (EA8). Appellants argue that this reasoning is improper (RBr2-5). The Examiner further states that "Sugano et al is relied upon only to show that moving the objective lens toward and away from the cleaning disk is known in the prior art and one having ordinary skill would have realized the advantages of having such movement and

applied these teachings to Yamamoto, as set forth in the art rejections, supra" (EA8; paraphrased at SEA2)).

We generally agree with the Examiner's reasoning, which relies on what Sugano would have taught one of ordinary skill in the art, rather than on made-up reasons about the length of the brush strands. Claim 1 requires the cleaning motions to be done by a "cleaning control means." Sugano taught one of ordinary skill in the art that cleaning may be done by moving the lens toward and away from the cleaning disk. Sugano states that the cleaning operation is performed without any special operations or processing (translation, p. 24), which implies that this method is an improvement over a control circuit. Sugano does not state that a control circuit will not work and, so, does not teach away. See In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) ("A reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant."). That using software control to provide axial movement in

Sugano would be more complex and expensive is not a technical reason indicating nonobviousness. See Orthopedic Equipment Co. v. United States, 702 F.2d 1005, 1013, 217 USPQ 193, 200 (Fed. Cir. 1983) ("[T]he fact that the two disclosed apparatus would not be combined by businessmen for economic reasons is not the same as saying that it could not be done because skilled persons in the art felt that there was some technological incompatibility that prevented their combination. Only the latter fact is telling on the issue of nonobviousness."); In re Farrenkopf, 713 F.2d 714, 718, 219 USPQ 1, 4 (Fed. Cir. 1983). Yamamoto discloses that a cleaning motion can be controlled by a control circuit. One of ordinary skill in the art would have known that the motion of Sugano could be controlled by a control circuit both from Sugano and from Yamamoto. In combining the teachings of Yamamoto and Sugano, it would have been apparent to one of ordinary skill to use software control for both operations.

Appellants argue that one of ordinary skill in the art would not have been led to modify Yamamoto to include a cleaning control means that rotates the cleaning disk while

"simultaneously moving the objective lens toward and away from the cleaning disk and reciprocating said optical head toward the inner and outer peripheries of the disk" (emphasis added), as defined in claim 1 (Br14). It is argued that, "[a]t best, [the] combination only suggests moving the lens toward the cleaning disk a single time prior to radially reciprocating the lens, and then moving the lens away from the cleaning disk after the radial reciprocation is completed" (Br15).

We disagree with Appellants' argument. Sugano clearly teaches moving the objective lens up and down while the cleaning disk is rotating and would operate in the same way if combined with Yamamoto. The teachings of Sugano would have to be modified to operate in the way suggested by Appellants, whereas the combination proposed by the Examiner combines two independent cleaning operations.

Appellants argue that Yamamoto already includes a means for making contact between the lens and brush, so Yamamoto does not disclose or suggest a benefit for a non-disclosed up-and-down operation and cannot provide the motivation for simultaneous axial and radial movement of the lens (Br15;

Br17). Appellants argue that Sugano discloses a cleaning procedure that is intended to operate without the use of specific cleaning software, that the axial movement is only a side effect of this goal, and, accordingly, Sugano does not disclose or suggest any additional benefit gained by axial movement of the lens other than as a way to make contact between the lens and the brush without the use of specific cleaning software or cleaning commands (Br15-16). It is also argued that the focusing operation in Sugano is only executed with the lens at a fixed radial position, so that any radial movement during the focusing operation would be contrary to the explicit teachings of Sugano (Br17-18).

The test for obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art. In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). One cannot show nonobviousness by attacking the references individually where the rejection is based on a combination of references. Id. at 426, 208 USPQ at 882. Appellants' arguments would limit the use of any reference to its express teachings. This is error. One of ordinary skill in the art would have

been motivated to combine the individual teachings of Yamamoto and Sugano to produce a device which achieves the benefits of each type of cleaning operation.

For the reasons stated above, we conclude that the combination of Yamamoto and Sugano is sufficient to establish a prima facie case of obviousness. The rejection of claims 1, 4-8, and 10 is sustained.

Yamamoto, Sugano, and Nonaka

Nonaka discloses cleaning the dust particles from the sliders 2 of a hard disk drive by rotating the disks 1 at a low rotational speed in the opposite direction to the ordinary read/write direction (col. 3, lines 46-53) to allow dust to adhere to the rear of the slider (figure 2), and then moving the sliders to the non-recording region and repeatedly starting and stopping the disk rotation in the ordinary direction of rotation to force dust on the trailing edge of the slider to fall onto the disk surface (col. 4, lines 17-27).

The Examiner concludes that it would have been obvious to provide Yamamoto with a control command to rotate the

motor in both directions while cleaning because this would "wear the cleaning member and clean the objective lens more evenly, providing longevity for the cleaning disk" (FR4; EA5).

Appellants argue that Nonaka cannot be relied on because Nonaka does not disclose wear of the cleaning member (Br23). It is also argued that Nonaka is directed to a floating head where the data disk is cleaned by reversing the direction of rotation whereas in the claimed invention the lens is cleaned by direct contact (Br24). Therefore, Appellants argue, it is improper for the Examiner to rely on a motivation to combine based on wear (Br25).

The Examiner responds that Nonaka teaches the advantages of having a reversing motor control which would have suggested applying this kind of control to Yamamoto to facilitate proper cleaning of the objective lens (EA10).

This is a close question of obviousness. We agree with Appellants that Nonaka is irrelevant to the problem of cleaning an objective lens. Nonaka teaches reversing a motor, but it does so to clean the record head and surface of a magnetic disk. We find no logical reason why one of

ordinary skill in the art would have looked to Nonaka for a solution to the problem of cleaning a lens in an optical disk driver. However, the Examiner's reasoning that it would have been obvious to alternate the direction of rotation of the cleaning disk because this would "wear the cleaning member and clean the objective lens more evenly, providing longevity for the cleaning disk" (FR4; EA5), is logical by itself without Nonaka. When the lens is brushed in only one direction, the lens will not be cleaned evenly on both sides and the hairs on the brush will tend to wear from the side that hits the lens first. On the other hand, without a reference, it is difficult to say that this is not hindsight based on Appellants' disclosure. On balance, we conclude that the Examiner's reasoning needs to be supported by a reference (other than Nonaka). Accordingly, we conclude that the Examiner has failed to establish a prima facie case of obviousness with respect to claim 2. The rejection of claim 2 is reversed.

Adachi and Mitani

Adachi discloses cleaning by "making the objective lens move similarly with the time of writing and reading of data using a focus actuator and a track actuator" (emphasis added) (Abstract Purpose). Adachi discloses a "control section 7 that . . . gives command to a focus actuator 5 to bring the objective lens 3 into contact with the fiber for cleaning and at the same time gives driving command to a track actuator 6 to move the objective lens 3 in the direction of the track is provided" (emphasis added) (Abstract Constitution). The arrow in figure 2 shows the lens 3 being moved into contact with the cleaning fiber 2 and the arrows in figure 3 show movement of the lens 3 back and forth in the radial direction. Adachi does not expressly disclose that the lens is moved toward and away from the cleaning disk, while being moved in a radial direction: it appears that the lens is moved into contact with the cleaning disk and held there while the lens is moved in a radial direction.

Mitani discloses cleaning an optical disk apparatus by rotating at low speed a head cleaning member 1 having hair 5

on the surface while performing several low speed reciprocations of the carriage 3 containing the optical head 4.

The Examiner concludes that it would have been obvious to provide Adachi with a control to reciprocate the objective lens in the radial direction as suggested by Mitani (FR5: EA6): "The motivation would have been: reciprocating the cleaning actions of the objective lens would have worn the cleaning member and cleaned the objective lens more evenly, providing longevity for the cleaning disk and the lens."

Appellants argue that the Examiner's rationale for the combination relies on two problems with prior art devices (only part of the brush is used for cleaning and the lens can not be perfectly cleaned) which are only disclosed by Appellants and, thus, the Examiner has improperly utilized Appellants' disclosure as a roadmap for the proposed combination (Br26-27).

In this case, Adachi discloses moving the lens in a radial direction and at the same time (i.e., "simultaneously") bringing the objective lens into contact

with the cleaning disk. It is implied, but not expressly stated, that the lens in Adachi is reciprocated in the radial direction. However, Mitani expressly discloses reciprocating the lens in a radial direction. Thus, there is an express suggestion for the proposed modification without the Examiner's reasons.

Appellants argue that "[n]one of the cited references, including Mitani, disclose or suggest a reason for including a reciprocating optical lens" (Br27).

Mitani discloses a reciprocating optical lens; it does not need to teach the reason for it. Of course, Yamamoto expressly teaches a reason for the reciprocating optical lens, of which one of ordinary skill in the art would have been aware.

Appellants argue that Adachi moves the lens toward contact with the cleaning disk during the focus operation, the lens is moved in the radial direction, and the lens is presumably moved away from contact once the cleaning operation is complete (Br28). Thus, it is argued, "Adachi lacks the repeated axial movement of the objective lens 'toward and away' from the cleaning disk that is occurring

while 'simultaneously' moving the head in the radial direction" (Br28-29) and Mitani does not supply the missing teaching of repeated axial movements (Br29).

We agree with Appellants' argument. Adachi does not expressly disclose repeated axial movements during the radial movement. The Examiner could have combined Adachi with Sugano which expressly discloses repeated axial movements, but did not do so. Accordingly, we conclude that the Examiner has failed to establish a prima facie case of obviousness with respect to claim 1. The rejection of claims 1, 4-8, and 10 is reversed.

CONCLUSION

The rejection of claims 1, 4-8, and 10 under 35 U.S.C. § 103(a) over Yamamoto and Sugano is sustained.

The rejection of claim 2 under § 103(a) over Yamamoto, Sugano, and Nonaka is reversed.

The rejection of claims 1, 4-8, and 10 under § 103(a) over Adachi and Mitani is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

LEE E. BARRETT Administrative Patent Judge	)	
JOSEPH F. RUGGIERO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

)
PARSHOTAM S. LALL)
Administrative Patent Judge)

Patrick G. Burns
GREEN, BURNS & CRAIN, LTD.
Sears Tower - Suite 8660
233 South Wacker Drive
Chicago, IL 60606